

Abstract of the Disclosure

A direct contact steam injection heater is placed directly in line with a flow of stock through a pipe. The steam injection heater includes a Mach diffuser having a plurality of steam diffusion holes and an adjustable steam-plug cover that is positioned within a stationary diffuser tube to modulate the amount of steam added to the flowing stock by exposing a desired number of steam diffusion holes. The steam tube assembly includes an O-ring that forms a seal along the inner wall of the diffuser tube to prevent the flow of stock into the steam tube assembly when steam pressure is not present. Select areas of the steam injection heater, including the deflection plate, diffuser tube and heater body inner wall are coated with a wear coating such as tungsten carbide. Further, a pair of pressure ports are formed in the steam-plug cover to equalize the pressure between the open interior of the steam-plug cover to further facilitate rotation of the steam-plug cover.